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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/884,373	06/19/2001	Shoupu Chen	82833THC	1785

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EXAMINER

STREGE, JOHN B

ART UNIT	PAPER NUMBER
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2625

DATE MAILED: 06/16/2004

4

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/884,373

Applicant(s)

CHEN ET AL.

Examiner

John B Strege

Art Unit

2625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 June 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 June 2001 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2.3</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 4 recites the limitation ""the oval region" in line 5. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, and 6-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Luo (hereinafter referred to as J-Luo) EP 0899680 in view of Luo et al. USPN 5,892,837 (hereinafter referred to as "Luo").

J-Luo discloses steps for locating human eyes in a digital image comprising (a) detecting skin colored regions in a digital image; (b) searching the skin colored regions for groups of pixels with color characteristic of redeye defect (thus detecting iris color

pixels in the skin colored region); where step (b) further includes estimating the locations of the detected iris color pixels in the skin colored region (page 2, lines 18-23).

J-Luo does not explicitly disclose estimating the size of each eye based on the distance between the estimated initial eye positions; forming a first search window for one eye, the center of the window being the estimated initial position for the one eye and the size of the window being proportional to the estimated size of the one eye; and employing a template to locate an eye in the first search window.

Luo discloses a method for locating objects in an image involving inputting to an interface an approximate position of each object for forming initial input positions; determining an estimate size of each object based on the distance obtained from the initial input positions of the first and second objects; forming a first searching window for the first object where the center of the first window is determined by the input position of the first object and the size of the first window is determined by the estimate size of the first object; and positioning a template on the first search window for determining a location (at least col. 2 lines 24-35). In the preferred embodiment the objects are disclosed as human eyes (col. 4 lines 21-22). Luo further discloses that identifying objects in an image is performed in a variety of image processing functions, for example in the correction of red-eye in images (col. 1 lines 35-39). Luo further discloses that there are various drawbacks with the prior art systems such as requiring constant human interaction of repeatedly touching the screen for zooming in on the eye and as a result is labor intensive (col. 1 line 63 – col. 2 line 1).

J-Luo and Luo are analogous art because they are from the same field of endeavor of using image processing to locate objects in an image.

At the time of the invention it would have been obvious to one of ordinary skill in the art to combine J-Luo and Luo to obtain a system that automatically locates the eye without need for user interaction. The locations of the eye found by J-Luo could be used as initial estimates of the eye location for the more accurate locating method given by Luo. The motivation for this comes from the statement by Luo that a problem exists involving the need for human interaction. Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to combine J-Luo and Luo to obtain the invention as specified in claim 1, thus making the system automatic.

Regarding claim 2, Luo discloses forming a second searching window for the second object; the center of the second window is determined by the input position of the second object and the size of the second window is determined by the estimate size of the second object; and employing a template to determine a location (at least col. 2 lines 33-40).

Regarding claim 3, J-Luo discloses fitting an ellipse 35 (figure 6) to the individual skin color regions (paragraph 23). From this elliptical skin colored regions the eyes are located (paragraph 26).

Regarding claim 4 J-Luo discloses that eye pixels will appear as small elliptical areas of high code value and morphological processing is carried out to remove noise (paragraph 27) (thus the pixels that remain are clusters of high code value relating to the eye). The center of the template images corresponds to the center of the eye

(paragraph 36)(thus the center of the iris color pixel cluster is found). The ellipse has a major axis and the left eye falls on the left half of the axis and the right eye on the right half (paragraph 24). This is used to find the location of the red-eyes which can be used as an initial estimate of eye positions with the same motivation given above.

Regarding claims 6-8 see Luo col. 6 lines 20-36 (also similar to claims 2-4).

Regarding claims 9-10 see Luo col. 6 line 49 – col. 7 line 24 (also similar to claims 5 and 7).

Regarding claims 11-15 see Luo col. 7 lines 15-63 (also similar to claims 8-10, 12, and 18).

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Luo (hereinafter referred to as J-Luo) EP 0899680 in view of Luo et al. USPN 5,892,837 (hereinafter referred to as “Luo”) and further in view of Bortolussi et al. USPN 6,292,575 (hereinafter “Bortolussi”).

As discussed above J-Luo and Luo provide for the limitations of claim 1. J-Luo also discloses scoring functions such as P-eye which indicate the likelihood that a candidate redeye pixel is actually part of a red-eye defect in the image (paragraph 43)(read as a probability). However, J-Luo and Luo do not explicitly disclose using a Bayes model to produce a look up table indicating the probability that a given pixel is an iris colored pixel.

Bortolussi discloses determining the face probability within a color space using a Bayes model (col. 7 lines 18-21). Furthermore the probability is used to calculate the

values of the face probability look-up table (col. 7 lines 25-27). Bortolussi discloses that this is done to simplify the processing of the acquired image while concomitantly enhancing the accuracy of the system.

J-Luo, Luo, and Bortolussi are analogous art because they are all from the same field of endeavor of processing facial images.

At the time of the invention it would have been obvious to one of ordinary skill in the art to combine J-Luo, Luo, and Bortolussi to use the Bayes model and look up table as disclosed by Bortolussi in order to detect iris color pixels. The motivation for doing so is that it would simplify the processing of locating eye pixels and enhance the accuracy of the system. Thus it would have been obvious to one of ordinary skill in the art to combine J-Luo, Luo, and Bortolussi to obtain the invention as specified in claim 5.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John B Strege whose telephone number is (703) 305-8679. The examiner can normally be reached on Monday-Friday between the hours of 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on (703) 308-5246. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JS



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